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AN ANIMAL WEATHER BUREAU

(Concluded from page 93)

Not less weather-shrewd than birds and land animals are the inhabitants of the deep. It is said that sea-urchins foreknow the approach of a storm at sea, and that they cover themselves with little stones (the precursors of anti-rolling tanks), for they are unwilling to wear away their prickles by rolling along. As soon as sea-faring folk observe their action, they at once moor their ship with several anchors⁵¹ (Pl. 9.100)⁵². When these animals fasten themselves in the sand or burrow in it, they are preparing for storm (Pl. 18.361). Shell-fish adhere to objects for similar protection (Pl. 18.361).

Plutarch, *Naturales Quaestiones* 18, asks why the sight of a cuttle-fish is a sign of a great storm.

Is it because all fishes of the soft kind cannot endure cold, by reason of their nakedness and tenderness? For they are covered neither with shell, skin, or scale, though within they have hard or bony parts. Hence the Greeks call them 'soft fish'. Therefore they easily perceive a storm coming, since they are so soon affected by the cold. When the polypus gets to shore and embraces the rocks, it is a sign that the wind is rising; but the cuttle-fish jumps up to shun the cold and the trouble of the bottom of the sea; for, of all the soft fishes, she is the softest and the soonest hurt⁵⁶.

When the cuttle-fish springs out of the water, it means a storm (Pl. 18.361, 32.15; Cicero, *De Divinatione* 2.145)⁵⁷. If *pulmones* ('sea-lungs') are seen floating on the surface, they are a sign of stormy weather for many days to come (Pl. 18.359; compare Th. 40). A dolphin frequently diving and coming to the surface near the shore indicates rain or storm (Th. 19)⁵⁸. Compare Dante, *Inferno*, Canto XXII, 19-21:

Come i delfini, quando fanno segno
Ai marinai con l'arco della schiena
Che s' argomentin di campar lor legno.

Theophrastus (40) says: 'All the signs which indicate rain bring stormy weather, that is to say, snow and storm, if not rain'. He evidently means the signs

⁵¹Compare Inwards, 142: "The cod is said to take in ballast before a storm. It is said by Sergeant McGillivray, Signal Corps, U. S. A., that there is one well-authenticated instance of this saying. A number of cod were taken twelve hours before a severe gale, and it was found that each had swallowed a number of small stones, some of the stones weighing three or four ounces".

⁵²Cockles and most shell fish are observed against a tempest to have gravel sticking hard unto their shells, as a providence of nature to stay or poise themselves, and to help to weigh them down, if raised from the bottom by surges": Dunwoody, 49.

⁵³Compare Plutarch, *Moralia* 979 B; Oppianus, *Halieutica* 2.225.

⁵⁴Goodwin's translation.

⁵⁵Compare Lucan, *Pharsalia* 5.552.

⁵⁶"Cat-fish jump out of the water before rain": Dunwoody, 49.

that he himself mentions, but the statement would doubtless apply to all other signs of rain.

A Dr. Jenner has made an interesting collection of weather indications in a composition that reminds one of Aratus. I quote it in abridged form:

Signs of Foul Weather

The soot falls down, the spaniels sleep.
And spiders from their cobwebs peep. . . .
Loud quack the ducks, the sea fowl cry. . . .
How restless are the snorting swine!
The busy flies disturb the kine.
Low o'er the grass the swallow wings,
The cricket, too, how sharp he sings!
Puss on the hearth, with velvet paws,
Sits wiping o'er her whiskered jaws. . . .
Through the clear stream the fishes rise,
And nimbly catch the incautious flies.
The glow worms num'rous, clear and bright,
Illum'd the dewy hill last night.
At dusk the squalid toad was seen,
Like quadruped stalk o'er the green. . . .
The frog has changed his yellow vest,
And in a russet coat is drest. . . .
The mellow blackbird's voice is shrill.
The dog, so alter'd in his taste,
Quits mutton-bones, on grass to feast.
Behold the rooks, how odd their flight,
They imitate the gliding kite,
And seem precipitate to fall,
As if they felt the piercing ball.
The tender colts on back do lie,
Nor heed the traveller passing by. . . .
'Twill surely rain, we see't with sorrow,
No working in the fields tomorrow⁵⁹.

WINDS AND RAINY WINDS

Atque haec ut certis possemus discernere signis
aestusque pluviasque et agentes frigora ventos. . . .

In this manner we find Vergil, *Georgics* 1.351-352, introducing his list of signs for winds. The signs described by Vergil in *Georgics* 1.360-364 would be noted by seamen as well as by peasants. I quote Williams's translation:

Now the smiting seas
Scarce spare the ship's round side; the sea-gulls wing
From mid-sea swiftly home and fill the shore
With clamorous voice; while safe upon the beach
The brown coots play; the heron makes escape
From green salt fens, her haunt, and cloudward soars.

The alert mariner has ample warning of the approach of winds. Divers and ducks, when they clean their feathers with their bills, announce high winds. This is also the case when aquatic birds unite in flocks, when cranes make for the interior, and when divers or sea-mews forsake the sea or the creeks (Pl. 18.362;

⁵⁹Chambers's Book of Days, 1. 367.

compare Lucan 5.553). The flapping of the wings by *alθvial* (gulls?: see above, note 28) and ducks means wind⁶⁰ (Th. 28)⁶¹.

When sailors see cranes wheel about and fly in the opposite direction, they return to port (Ael. 7.14; compare 7.7). The flying of the *kepphos* (an unknown water bird) during a calm heralds wind (Th. 28). Even the direction from which a wind is to come may be ascertained, for, when it is clear, this bird flies in flocks opposite to the direction of the approaching wind (Ar. 916-917). Not less serviceable is the heron, since it places its head on its breast in the direction from which the most violent wind may be expected⁶² (Dionysius, *De Avibus* 2.8). It is a sign of wind when the heron flies aloft from the sea (Lucan 5.549-555) and screams (Th. 28; Ar. 913-914). Its cry early in the morning indicates either wind or rain (Th. 18), but a loud cry generally signifies wind (Th. 28).

By noting the actions of land birds and animals, the farmer could readily find indications of approaching wind-storms, which were destructive to vineyards. Sparrows chattering after evening has set in portend either a change of wind or showers (Th. 28). Ravens when they croak with a sort of gurgling noise give warning of the advent of wind, provided their note is continuous (Pl. 18.362). When quail are flying freely in the winter, one may know that the wind is from the north. The south wind is so heavy that it makes it difficult for them to fly. For this reason hunters 'pursue them when the wind is in the south, but not in fine weather'^{62a}. When birds bathe, it means winds and squalls (Ael. 7.7). Bees, too, detect the approach of wind (Ael. 5.13).

Hedgehogs are extremely weather-wise. When they conceal themselves in their holes, they afford a sure sign that the wind is about to change from northeast to south (Pl. 8.133). Theophrastus (30) says that the entrances to their burrows face north and south, and that they close the entrance toward which the wind is blowing. If they close both entrances, there will be a violent wind. Aristotle, *Historia Animalium* 9.7.5, attributes great powers to these animals. When the north and south winds change, those that dwell in the earth alter the position of the entrance to their burrows; those which are kept in houses change their position from wall to wall. They say that in Byzantium there lived a man who obtained the reputation of weather-seer from predictions made on observations of a hedgehog. According to Plutarch, *Moralia* 972 A, hedgehogs shift their positions as a sailor shifts sails. The same author tells us that a famous hedgehog weather-

seer lived at Cyzicus. An echo of these classical passages is to be found in Poor Robin's Almanack for the year 1733:

Observe which way the hedgehog builds her nest,
To front the north, or south, or east or west;
For if 'tis true that common people say,
The wind will blow the quite contrary way.

The squirrel, too, has the power of foreseeing storms, and, like the hedgehog, stops up the entrance toward which the wind is blowing (Pl. 8.138). A dog rolling on the ground indicates a violent wind (Th. 29). Many spider webs borne in the air betoken wind or a storm (Th. 29; Pl. 11.84). In general, when wild creatures approach cultivated lands, it signifies a north wind and a severe storm (Th. 47). Dolphins playing in a calm sea announce wind in the quarter from which they make their appearance⁶³ (Pl. 18.361).

CLEAR WEATHER

Nec minus ex imbri soles et aperta serena
prospicere et certis poteris cognoscere signis.

With these lines of Georgics 1.393-394 Vergil begins his long array of clear weather signs, seventeen lines of which are devoted to indications from the animal kingdom (Georgics 1.398-414). Williams translates the passage as follows:

Nor does the halycon sunward spread her wings
Along the sea-marge, bird to Thetis dear;
Nor do the filthy swine their sheaves of straw
Bite, but they toss them fiercely round the pen.
The misty clouds creep downward to the vales
And linger on the meadows; the night-owl
Watching from house-tops how the sun goes down
Now sings in vain her ominous even-song;
Aloft in cloudless air the osprey soars,—
Nisus he was, and Scylla feels her doom
For faithless theft of that one purple hair;
And where her wings escaping cleave the blue,
Lo, with a mighty whirr of wings her foe
Nisus, air-borne, pursues; where Nisus rides
Upon the wind, there too must Scylla fly
And cleave with panic wing the vacant blue.
Then with clear note and eager-throated voice
The crows three times and four repeat their cry,
And often in their airy dwelling feel
A strange new stir of joy, and hid in leaves
Make clamorous talk; they love when storms are done
To tend the small broods and dear nests once more.

In general, land birds flying in silence to watery places, or circling about amid a flock during a storm, are harbingers of clear weather (Ael. 7.7). When cranes take to flight and do not return, it indicates fair weather, for they do not depart before ascertaining that the sky is clear (Th. 52; Ar. 1010-1012). They proclaim fair weather by flying aloft in silence (Pl. 18.356). By flying leisurely they promise a fine day and still air (Ael. 7.7). Good weather will follow the screeching or hooting of an owl during a shower (Pl. 18.362), or during more stormy weather (Ael. 7.7)⁶⁴. This is true likewise of the 'sea-owl' (Th. 52).

⁶⁰Obviously a sort of sympathetic magic.

⁶¹Compare Ar. 918-919.

⁶²A dead kingfisher suspended from the beam of a cottage ceiling, even if it is sheltered from the immediate influence of the wind, is supposed to show every change of the wind by turning its beak to the quarter from which the wind blows. At times stuffed birds are used for this purpose (see Dyer, 76). In Marlowe's *Jew of Malta*, 1633, we find the following: "But how stands the wind? Into what quarter peers my halycon's bill?"

^{62a}Aristotle, *Historia Animalium* 8.14.5; compare Pl. 10.66.

⁶³"Bluefish, pike, and other fish jump with head towards the point from which a storm is coming": Dunwoody, 49.

⁶⁴Compare Th. 52; Ar. 999-1001; Geoponica 1.2.6.

If one takes a mole⁶⁵ and puts it in a vessel with clay plastered round the bottom, it indicates by its cries either wind or fair weather (Th. 49). The wren announces fair weather by flying out of a hole, or an enclosure, or its nest (Th. 53). If oxen recline on the left side, it is going to be clear (Th. 54; Ael. 7.8). The same thing is true of dogs (Th. 54). When sheep are frisky, there will be a clear day (Ael. 7.8). If ewes begin to breed late in the season, it is a certain sign of the continuance of fair weather (Th. 54). When the wild sow farrows, that night falls no rain (Plutarch, *Naturales Quaestiones* 21). Clear weather will follow the appearance of hares in large numbers in the same places (Ael. 7.8). Prior to a calm, dolphins throw up the water on a billowy sea (Pl. 18.361).

It is going to be clear when solitary ravens caw twice, then caw in greater numbers, and finally seek their roosts in flocks with vociferous cawing⁶⁶ (Ar. 1003-1006); also when a raven by itself croaks quietly, or if it croaks thrice and then several times (Th. 52). When ravens flock together as if they were having a good time and then begin to caw, no rain is going to fall (Geoponica 1.2.6). Leisurely cawing of a crow in the evening summons a fine morrow (Ar. 1002; Ael. 7.7). The crow, if it caws thrice immediately after daybreak, indicates fair weather, and also when it caws quietly in the evening during a storm (Th. 53)⁶⁷.

Insects, too, are prophets of clear weather: bees, by swarming out from the hives (Pl. 11.20), ants by carrying their eggs in (Th. 22), and spiders by refraining from spinning⁶⁸ (Pl. 11.84).

FROST AND SNOW

Bees detect the approach of cold spells and frost (Ael. 1.11). The jackdaw, too, knows when frost is coming (Ael. 7.7). The chaffinch takes precautions against snow (Ael. 4.60). Contemporary weather lore has more to say on this subject than has survived in classical tradition. In Northern United States katydids begin to sing six weeks before frost; in the South the time is three months. "When locusts are heard, dry weather will follow, and frost will occur in six weeks" (Inwards, 149). In Scotland "Hares take to the open country before a snowstorm" (Inwards, 131). In Wales "The cat was thought to be a capital weather-glass. If she stood or lay with her face towards the

fire, it was a sign of frost or snow; if she became frisky, bad weather was near" (Owen, 340). One can still hear his country friends say: "When the crow flies low, it's a sign of snow"; "When wrens are seen in winter, expect snow"⁶⁹.

One can readily understand how a peasant could put trust in such weather signs as this paper records, but that an intelligent man should have confidence in more than a few of them is almost beyond belief. Cicero, *De Divinatione* 1.16, after translating from Aratus several typical weather signs, writes: *Sic ventorum et imbrium signa, quae dixi, rationem quam habeant, non satis perspicio; vim et eventum agnosco, scio, adprobo*. Vergil, *Georgics* 1.415 f., takes pains to refute the prevalent notion that animals, especially birds, are endowed by God or Fate with greater foresight than man in predicting the weather, and

explains their conduct, as Lucretius and the Epicureans and modern science would do, on natural grounds, stating that they are extremely sensitive to changes in the condition of the atmosphere, in fact that their physical organization makes them excellent barometers⁷⁰.

Says Burroughs, *Signs and Seasons*, 7:

To what extent the birds or animals can foretell the weather is uncertain. When the swallows are seen hawking high, it is a good indication: the insects upon which they feed venture up there only in the most auspicious weather. Yet bees will continue to leave the hive when a storm is imminent.

A sign may at times be ambiguous. In modern weather lore a cat with its tail up and hair apparently electrified indicates approaching wind, but as Inwards, 126, remarks, it may indicate also—a dog! Aratus (1142-1144) seems to be afraid of being taken too literally. He winks at the reader and tells him not to put complete confidence in any one of the signs he has enumerated; that it is better to have two pointing to the same thing; and that a person may have more assurance when there are three.

Doubtless some delicately constituted animals *are* sensitive to atmospheric changes, and an occasional sign may have some basis in reason. There is striking confirmation of such a possibility. When Helen Keller was seven years old, she was left alone for a few moments in the branches of a tree:

"Suddenly a change passed over the tree. All the sun's warmth left the air. I knew the sky was black, because all the heat, which meant light to me, had died out of the atmosphere. A strange odour came up from the

⁶⁵Woodcock has been suggested for *σπύλαξ*.

⁶⁶In the *Georgics*, the allusion is evidently to *rooks*, as is perhaps also the case, though more doubtfully, in Aratus, cf. W. W. Fowler, *A Year with the Birds* (3rd ed.), p. 234: "Thompson, 94."

⁶⁷Compare Ar. 1002; Ael. 7.7; Geoponica 1.2.6.

⁶⁸Compare modern folklore: "If spiders work in the morning early at their webs, there will be a fine day." "If spiders' webs <gossamer> fly in the autumn with a south wind, expect an east wind and fine weather". Fair weather will likewise follow if gnats fly in compact bodies in the beams of the setting sun. If bats flutter and bees fly about, there will be a fine morrow. See *Encyclopaedia of Superstitions, Folklore and the Occult Sciences*, 2.1135.

⁶⁹According to Dyer, 100, "In certain districts of Scotland, it is regarded as a token of fine weather, if the snail obeys the command to put out its horn:—

'Snailie, snailie, shoot out your horn,
And tell us if it will be a bonnie day the morn'."

⁶⁹"In the southeast of Ireland should it <the robin> enter a house, it is said to prognosticate hard weather, snow, frost, etc. In Devonshire it often goes by the name of 'Farewell Summer'" (Dyer, 65). In England, according to Dyer, 96,

'When dotterel do first appear,
It shows that frost is very near;
But when the dotterel do go,
Then you may look for heavy snow'.

One may know also when the snow is about to melt. "When little black insects appear on the snow, expect a thaw": Inwards, 149. In Wales, "If mole hills move, there will be a thaw": Owen, 349. In England, says Dyer, 260,

'If there's ice in November that will bear a duck,
There'll be nothing after but sludge and muck'.

⁷⁰So T. E. Page, in his note on *Georgics* 1.415.

earth. I knew it, it was the odour that always precedes a thunderstorm, and a nameless fear clutched at my heart"⁷¹.

In general, however, one is disposed to agree with Cornwall's couplet: "Those that are weather-wise are seldom otherwise".

It is impossible to separate the weather lore of the Greeks and the Romans. The Latin poets seem to be following blindly a Greek literary tradition⁷². They are obviously more indebted to their reading than to their own observation or to familiarity with weather lore of their own countrymen. If, however, all instances of prognostics which are the same in both Greek and Latin were to be ascribed to Greek sources, there would be but a small Roman residuum. The notion that the crow, for instance, is a weather prophet is almost as cosmopolitan as the bird, and it would be rash to say that the Roman peasant had no crow lore of his own. Still, even a casual reading of this article must leave one with the impression that the Greeks were more versatile, if not more accurate, prognosticators.

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REVIEWS

Die Griechische Tragödie. By Johannes Geffcken. Leipzig: B. G. Teubner (1918). Pp. 116.

Die Griechische Komödie. By Alfred Körte. Leipzig: B. G. Teubner (1914). Pp. 104.

These two books, belonging to the series entitled *Aus Natur und Geisteswelt*, are written for the average reader, by experts who have the will and the ability to interpret a subject in its larger relations. Körte's book is based upon a course of lectures delivered to a popular audience in Frankfurt. Both books are well done. While they are not addressed to scholars, a scholar may read them with profit, for though brief in compass they are new-minted coin.

Geffcken's *Tragedy* begins with a discussion of origins, and of the theater, then considers the early drama down through the Promethean trilogy, the Orestean trilogy, the earlier plays of Sophocles, *Antigone* and *Ajax*, and then the *Trachiniae*. This last piece, Geffcken holds, may be placed, on stylistic grounds, as first in time of a group which includes also *Oedipus Tyrannus* and *Electra*. In the *Trachiniae*, Euripidean influence begins to appear, for example in the character of *Deianira*, 'sketched with a pencil that is almost Euripidean'. This play serves as an introduction to Euripides, whose *Alcestis*, *Medea*, and *Hippolytus* are then passed in review. A reference to the character of *Phaedra* as a kind of challenge which Sophocles accepted in his lost tragedy, *Phaedra*, leads us back to Sophocles. The *Oedipus Tyrannus* is then quite fully discussed, with frequent indications that the author of

the discussion has been stimulated by Robert's *Oedipus*. Geffcken is a sympathetic critic, but he does not fail to touch upon the foibles of Sophocles, such as the excessive occurrence of the suicide motive, and the inevitable oracle. From this point on Geffcken passes back and forth, showing the play of action and reaction between the two contemporary poets. He deals with the *Electras*, with the extant *Philoctetes* of Sophocles as compared with the recoverable plots of the like-named tragedies of Aeschylus and Euripides, and with the *Phoenissae* of Euripides, considered as a treatment of the Theban story, over against the *Oedipus at Colonus*. The last play considered is the *Iphigenia at Aulis*, in which Geffcken finds Euripides truly himself in his portraiture of despicable old men, nobly impulsive young men, and generous womanhood. The book closes with a brief chapter on the effect of Greek tragedy.

While the whole book is suggestive, especial mention may be made of the warmth and the lightness of touch with which Euripides and the Sophists are treated. There is much of value in the chapter on Aeschylus, particularly in the way of observations upon his instinctive dramatic sense and the growth of his dramatic skill. Both the Suppliants and the *Prometheus* are treated not as isolated pieces but as members of a trilogy. This means something for the *Prometheus*, which has suffered much at the hands of the philosophical school. The true approach is, as Geffcken says, not philosophical but historical. Aeschylus is first a playwright, with a master's feeling for a great situation. Such a situation he found in the *Prometheus* story, as it came to him from the past. He shaped and combined his material with the instinct of a dramatist. The philosophical interpretation represents, then, not the mind of Aeschylus, but the reaction of his work upon later minds. The reciprocal influence of the young Sophocles and the older Aeschylus finds illustration in the character of the *Prometheus* as a transition play, connecting the earlier manner with the mature art of the *Orestea*, while the *Triptolemus* of Sophocles is found to have been influenced by the *Prometheus*. In the *Antigone*, the much discussed verses, 904-920, are held to be genuine. Not that Geffcken admires this purple patch, for he does not. He holds with Masqueray that modern and ancient taste differ, and that this passage is a criterion of difference. Just as Sophocles gradually became Euripidean, so, Geffcken holds, Euripides was at first Sophoclean, for instance in making his *Alcestis* as unwavering as *Ajax* or *Antigone*. Geffcken has a keen eye for dramatic types. It is quite in accordance with the current view of the intimate relation of Euripides and later comedy that *Aegeus* in the *Medea* should be called the forerunner of the good uncle of comedy' and *Phaedra's* nurse 'a new Euripidean type, the procuress'.

Körte's *Comedy* follows a plan quite like that of Geffcken's *Tragedy*. In point of style the work is hardly so well phrased. After the opening chapter

⁷¹Helen Keller, *The Story of my Life*, 26.

⁷²Vergil is clearly under obligation to Aratus, and Aratus versifies the *De Signis* of Theophrastus, who in turn is indebted to Aristotle. Pliny, too, copied Greek sources.